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5073   7590   01/30/2008

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(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/841,397	04/30/1997	SHINYA MATSUOKA	063170.6251	3144

TITLE OF INVENTION: SPATIALIZED AUDIO IN A THREE-DIMENSIONAL COMPUTER-BASED SCENE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1440	$300	$1210	$1740	04/30/2008

EXAMINER	ART UNIT	CLASS-SUBCLASS
DINH, KHANH Q	2151	709-203000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE   (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
☐ Issue Fee
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☐ A check is enclosed.
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☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status (from status indicated above)**
☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.   ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

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This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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EXAMINER	
DINH, KHANH Q	
ART UNIT	PAPER NUMBER
2151	

DATE MAILED: 01/30/2008

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

Notice of Allowability	Application No.	Applicant(s)
	08/841,397	MATSUOKA, SHINYA
	Examiner	**Art Unit**
	Khanh Dinh	2151

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *12/12/2007*.

2. ☒ The allowed claim(s) is/are *1,3-9,11-18,20-25 and 45-50*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None of the:

       1. ☐ Certified copies of the priority documents have been received.

       2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

       3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

       1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of

       Paper No./Mail Date _____ .

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☐ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

Khanh Dinh

KHANH DINH
PRIMARY EXAMINER
TECHNOLOGY CENTER 2100

EXAMINER'S AMENDMENT

1.   An examiner's amendment to the record appears below. Should the changes and/or

additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR

1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the

payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with

Luke K. Pedersen (the Undersigned Attorney, Reg. No.45,003) on 1/7/2007.

The application has been amended as follows:

IN THE CLAIMS:

Please **amend** claims 18, 24, 25, 47 and 48 as follows:

--18. (Currently Amended) A computer program product comprising a computer [[useable]]

readable storage medium having computer program logic recorded thereon for enabling an audio

conference server to provide an application program with multi-point, weight controllable audio

conferencing, the application program operable to: computer program logic comprising:

manage at least one audio conference among a plurality of audio clients;

receive real-time audio data from the plurality of audio clients;

mix the real-time audio data and stored audio data associated with at least one point source into

spatialized audio data; and

deliver the spatialized audio data to one or more of the plurality of audio clients;

wherein the application program is operable to mix the real-time audio data and stored audio data

by: mixing means includes providing distance-based attenuation according to a plurality of

predetermined sound decay functions, each sound decay function being associated with a

respective one of the plurality of audio clients or the at least one point source, and a respective

volume/distance relationship; and excluding from the spatialized audio data, real-time audio data

or stored audio data that, if attenuated, occurs below a predetermined volume value.

24. (Currently Amended) A computer program product comprising a computer [[usable]]

readable storage medium having computer program logic recorded thereon for enabling an audio

conference server to provide an application program with multi-point, weight controllable audio

conferencing, the computer program logic comprising:

managing means operable to enable the computer to manage at least one audio conference

among a plurality of audio clients;

receiving means operable to enable the computer to receive real-time audio data from the

plurality of audio clients;

mixing means operable to enable the computer to mix the real-time audio data and stored audio

data associated with at least one point source to yield spatialized audio data; and

delivery means operable to enable the computer to deliver the spatialized audio data

to one or more of the plurality of audio clients; wherein the mixing means includes: means for

enabling the computer to identify a decay function from one of a plurality of pre-defined decay

functions and a customized decay function for each of the plurality of audio clients and the at

least one point source, the plurality of pre-defined decay functions including an audio big decay

function, an audio small decay function, an audio medium decay function, and a constant decay

function;

means for enabling the computer to determine respective distances between each of the plurality

of audio clients and from each of the plurality of audio clients to the at least one point source;

means for enabling the computer to determine a weighted value for each of the plurality of audio

clients and the at least one point source based on the identified decay function and the respective

distances between each of the plurality of audio clients and from each of the plurality of audio

clients to the at least one point source;

means for enabling the computer to generate a mix table including each of the plurality of audio

clients and the at least one point source;

means for enabling the computer to calculate an actual mix for the plurality of audio clients;

means for excluding from the actual mix, real-time audio data or stored audio data that occurs

below a predetermined volume value in the mix table; and

means for enabling the computer to refine the actual mix for the plurality of audio clients.

25. (Currently Amended) A computer program product comprising a computer [[usable]]

readable storage medium having computer program logic recorded thereon for enabling an audio

conference server to provide an application program with multi-point, weight controllable audio

conferencing, the computer program logic comprising:

managing means operable to enable the computer to manage at least one audio conference

among a plurality of audio clients;

receiving means operable to enable the computer to receive audio data from the plurality of

audio clients;

mixing means operable to enable the computer to mix the audio data to yield spatialized audio

data; and

delivery means operable to enable the computer to deliver the spatialized audio data to the

plurality of audio clients;

wherein the mixing means includes: means for enabling the computer to identify a decay

function from one of a plurality of pre-defined decay functions and a customized decay function

for each of the plurality of audio clients, the plurality of pre-defined decay functions including an

audio big decay function, an audio small decay function, an audio medium decay function, and a

constant decay function;

means for enabling the computer to determine distances between a target audio client and a

plurality of source audio clients;

means for enabling the computer to determine a plurality of weighted values for each of the

source audio clients based on the identified decay function and the distance between the source

audio client and target audio client, wherein each of the weighted values corresponds to a

source/target audio client pair;

means for enabling the computer to generate a mix table for each of the source/target audio client

pairs;

means for enabling the computer to calculate an actual mix for the source audio clients; and

means for enabling the computer to refine the actual mix for the source audio clients;

wherein the means for enabling the computer to refine the actual mix for the source audio clients

comprises:

means for enabling the computer to provide a gain control function to avoid transmitting excess

energy audio data;

means for enabling the computer to provide a fade in/fade out function to avoid the delivery of

the audio data in a step-wise manner to a speaker output;

means for enabling the computer to provide a floating point operation elimination function to

avoid the performance of floating point multiplication;

means for enabling the computer to provide a mixing adaption function to adapt the actual mix

calculation for the target audio client to available CPU resources;

means for enabling the computer to provide a mixing cut-off function to select the nearest talking

audio clients for the actual mix; and

means for enabling the computer to provide a stream audio function to prepare stream audio for

playing ambient background music or using an audio source forwarded from another conference.

47. (Currently Amended) A computer executable code embedded in a computer readable storage

medium executable by a processor for an audio conference server providing multi-point, weight

controllable audio conferencing, the code comprising:

a managing section operable to enable management of at least one audio conference among a

plurality of audio clients;

a receiving section operable to enable reception of real-time audio data from the plurality of

audio clients;

a mixing section operable to enable mixing of the real-time audio data and stored audio data

associated with at least one point source into spatialized audio data; and

a delivery section operable to enable delivery of the spatialized audio data to one or more of the

plurality of audio clients;

wherein the mixing section <u>includes:</u> includes

an attenuation section operable to provide distance-based attenuation according to a plurality of

predetermined sound decay functions, each sound decay function being associated with a

respective one of the plurality of audio clients or the at least one point source, and a respective

volume/distance; and

a selection section operable to exclude from the spatialized audio data, real- time audio data or

stored audio data that, if attenuated, occurs below a predetermined volume value.

48. (Currently Amended) A computer executable code <u>embedded in a computer readable storage</u>

<u>medium executable by a processor</u> for an audio conference server providing multi-point, weight

controllable audio conferencing, the code comprising:

a managing section operable to enable management of at least one audio conference among a

plurality of audio clients;

a receiving section operable to enable reception of real-time audio data from the plurality of

audio clients;

a mixing section operable to enable mixing of the real-time audio data and stored audio data

associated with at least one point source into spatialized audio data; and

a delivery section operable to enable delivery of the spatialized audio data to one or more of the

plurality of audio clients;

wherein the mixing section includes:

an identification section operable to enable identification of a decay function from one of a

plurality of pre-defined decay functions and a customized decay function for each of the plurality

of audio clients and the at least one point source, the plurality of pre-defined decay functions including an audio big decay function, an audio small decay function, an audio medium decay function, and a constant decay function;

a distance determining section operable to enable determination of respective distances between each of the plurality of audio clients and from each of the plurality of audio clients to the at least one point source;

a weighted value section operable to enable determination of a weighted value for each of the plurality of audio clients and the at least one point source based on the identified decay function and the respective distances between each of the plurality of audio clients and from each of the plurality of audio clients to the at least one point source;

a mix table section operable to enable generation of a mix table including each of the plurality of audio clients and the at least one point source;

a calculation section operable to enable refinement of the actual mix for the plurality of audio clients and the at least one point source;

a selection section operable to enable exclusion from the actual mix of real- time audio data or stored audio data that occurs below a predetermined volume value in the mix table; and

a refining section operable to enable refinement of the actual mix for the plurality of audio clients and the at least one point source.--

Allowable Subject Matter

2.   Claims 1, 3-9, 11-18, 20-25 and 45-50 are allowed.

Reason for allowance

3.   This communication warrants no examiner's reason for allowance, as applicant's reply makes evident the reason for allowance, satisfying the record as whole as required by rule 37 CFR 1.104(e). In this case, the substance of applicant's remarks filed on 12/12/2007 with respect to the added claim limitation point out the reason claims are patentable over the prior art of record. Thus, the reason for allowance is in all probability evident from the record and no statement for examiner's reason for allowance is necessary (see MPEP 13202.14).

Conclusion

5.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Dinh whose telephone number is (571) 272-3936. The examiner can normally be reached on Monday through Friday from 8:00 A.m. to 5:00 P.m.

     If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, FOLLANSBEE JOHN, can be reached on (571) 272-3964.   The fax phone number for this group is (571) 273-8300.

     Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KHANH DINH
PRIMARY EXAMINER
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